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EXAMINER	
JONES, DWAYNE C	

ART UNIT	PAPER NUMBER
1614	

DATE MAILED: 04/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/856,282	DAVIS, BONNIE M	
	Examiner	Art Unit	
	Dwayne C. Jones	1614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *the response of 17JAN2006 and 18AUG2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-5,7-22,24-26 and 28-41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-5,7-22,24-26 and 28-41* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10/17/5*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____

DETAILED ACTION

Status of Claims

1. Claims 1, 3-5, 7-22, 24-26, and 28-41 are pending.

2. Claims 1, 3-5, 7-22, 24-26, and 28-41 are rejected.

Response to Arguments

3. Applicant's arguments with respect to claims 1, 3-5, 7-22, 24-26, and 28-41 have been considered but are moot in view of the new ground(s) of rejection.

Information Disclosure Statement

4. The information disclosure statement filed on October 17, 2005 (1 sheet) has been reviewed and considered, see enclosed copy of PTO FORMS 1449.

Claim Objections

5. Claim 1 is objected to because of the following informalities: there needs to be a comma -- , -- or the word – and – inserted between the words "lycoramine" and "rivastigmine" in line 4 of this claim. Appropriate correction is required.

6. Claim 8 is objected to because of the following informalities: the "lycoramine" is incorrectly spelled in line 3 of this claim. Appropriate correction is required.

7. Claim 21 is objected to because of the following informalities: there needs to be a comma -- , -- or the word – and – inserted between the words "lycoramine" and "rivastigmine" in line 6 of this claim. Next, the underscore " _ " before the word "having" needs to be removed. In addition, there are two periods after the word "sleep" at the

end of the claim, and one of them needs to be deleted. Appropriate corrections are required.

8. Claim 34 is objected to because of the following informalities: the word methoxy is incorrectly spelled as "rnethoxy" in line 3 of this claim. Appropriate correction is required.

Claim Rejections - 35 USC § 112

9. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

10. Claims 1, 3-5, 7-21, and 24-26, and 28-40 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

11. *Regents of the University of California v. Eli Lilly & Co.., 119 F.3d 1559, 1568 (Fed. Cir. 1997), cert. denied, 523 U.S. 1089, 118 S.Ct. 1548 (1980),* holds that an adequate written description requires a precise definition, such as by structure, formula, chemical name, or physical properties, "not a mere wish or plan for obtaining the claimed chemical invention." *Eli Lilly, 119 F.3d at 1566.* The Federal Circuit has adopted the standard set forth in the Patent and Trademark Office ("PTO") Guidelines

for *Examination of Patent Applications Under the 35 U.S.C. 112, 1 "Written Description" Requirement ("Guidelines"), 66 Fed. Reg. 1099 (Jan. 5, 2001)*, which state that the written description requirement can be met by "showing that an invention is complete by disclosure of sufficiently detailed, relevant identifying characteristics, "including, inter alia, "functional characteristics when coupled with a known or disclosed correlation between function and structure...." *Enzo Biochem, Inc. v. Gen-Probe., 296 F.3d, 316, 1324-25 (Fed. Cir. 2002)* (quoting Guidelines, 66 Fed. Reg. At 1106 (emphasis added)). Moreover, although *Eli Lilly* and *Enzo* were decided within the factual context of DNA sequences, this does not preclude extending the reasoning of those cases to chemical structures in general. *Univ. of Rochester v. G.D. Searle & Co., 249 F. Supp.2d 216, 225 (W.D.N.Y 2003).*

12. There is insufficient descriptive support for the phrase "diseases or conditions in which it is desirable to administer a centrally acting acetylcholinesterase inhibitor". In addition, the instant specification does not describe what is meant by the phrase "diseases or conditions in which it is desirable to administer a centrally acting acetylcholinesterase inhibitor" other than Alzheimer's disease. Although independent claim 21 does state, illustratively, that the acetycholinesterase inhibitor is useful for treating Alzheimer's disease, it does not specify other "diseases or conditions in which it is desirable to administer a centrally acting acetylcholinesterase inhibitor". . Structural identifying characteristics of the phrase "diseases or conditions in which it is desirable to administer a centrally acting acetylcholinesterase inhibitor" are not disclosed except for those Alzheimer's disease. There is no evidence that there is any per se

structure/function relationship between the phrase "diseases or conditions in which it is desirable to administer a centrally acting acetylcholinesterase inhibitor" other than those disclosed, namely Alzheimer's disease. The instant specification does provide an adequate written description for the phrase "diseases or conditions in which it is desirable to administer a centrally acting acetylcholinesterase inhibitor". Accordingly, these claims fail to comply with the written description requirement. In addition, independent claim 21 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement because the prior art does not teach that all of these inhibitors of acetyl cholinesterase possess these types of properties, see Goodman & Gilman's The Pharmacological Basis of Therapeutics, Ninth Edition, pgs 161-176, Chapter 8, 1996. In fact, some of these inhibitors of acetyl cholinesterase, such as the organophosphorus compounds, like sarin, or even pralidoxime, are not used therapeutically to treat Alzheimer's disease.

13. The rejection of claim 41 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement is withdrawn in response to the amendment of August 18, 2005.

14. Claims 1, 3-5, 21, 22, 24-26, and 39-41 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the acetyl cholinesterase inhibitors of galanthamine, lycoramine, and rivastigmine and the analogs of these

compounds that are specifically described with the replacement substituents on the hydroxyl, methoxy, and even the N-methyl groups of galanthaine or lycoramine and only for the treatment of Alzheimer's disease, does not reasonably provide enablement for other types of diseases or conditions in which it is desirable to administer a centrally acting acetylcholinesterase inhibitor as well as other analogs and derivatives of galanthamine, lycoramine, and rivastigmine. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use and make the invention commensurate in scope with these claims.

The factors to be considered in determining whether a disclosure meets the enablement requirement of 35 U.S.C. 112, first paragraph, have been described in In re Wands, 8 USPQ2d 1400 (Fed. Cir. 1988). Among these factors are: (1) the nature of the invention; (2) the state of the prior art; (3) the relative skill of those in the art; (4) the predictability or unpredictability of the art; (5) the breadth of the claims; (6) the amount of direction or guidance presented; (7) the presence or absence of working examples; and (8) the quantity of experimentation necessary. When the above factors are weighed, it is the examiner's position that one skilled in the art could not practice the invention without undue experimentation.

(1) The nature of the invention:

The instant invention is directed to pharmaceutical compositions of acetyl cholinesterase inhibitors of galanthamine, lycoramine, and rivastigmine and the analogs of these compounds that are specifically described with the replacement substituents on

the hydroxyl, methoxy, and even the N-methyl groups of galanthaine or lycoramine and only for the methods of treating Alzheimer's disease.

(2) The state of the prior art

The compounds of the inventions are acetyl cholinesterase inhibitors of galanthamine, lycoramine, and rivastigmine and the analogs of these compounds that are specifically described with the replacement substituents on the hydroxyl, methoxy, and even the N-methyl groups of galanthaine or lycoramine and are pharmaceutical compositions of acetyl cholinesterase inhibitors and methods of treating Alzheimer's disease as well as other types of diseases or conditions in which it is desirable to administer a centrally acting acetylcholinesterase inhibitor. However, the prior art does not teach that all of these inhibitors of acetyl cholinesterase possess these types of properties, see Goodman & Gilman's The Pharmacological Basis of Therapeutics, Ninth Edition, pgs 161-176, Chapter 8, 1996. In fact, some of these inhibitors of acetyl cholinesterase, such as the organophosphorus compounds, like sarin, are not used therapeutically to treat Alzheimer's disease.

(3) The relative skill of those in the art

The relative skill of those in the art of neuoropharmaceuticals is very high.

(4) The predictability or unpredictability of the art

The unpredictability of the pharmaceutical art is very high. In fact, the courts have made a distinction between mechanical elements functioning the same in different

circumstances, yielding predictable results, but chemical and biological compounds often react unpredictably under different circumstances. Nationwide Chem. Corp. v. Wright, 458 F. Supp. 828, 839, 192 USPQ 95, 105(M.D. Fla. 1976); Aff'd 584 F.2d 714, 200 USPQ 257 (5th Cir. 1978); In re Fischer, 427 F.2d 833, 839, 166 USPQ 10, 24 (CCPA 1970). Thus, the physiological activity of a chemical or biological compound is considered to be an unpredictable art. For example, in Ex Parte Sudilovsky, the Court held that Appellant's invention directed to a method for preventing or treating a disease known as tardive dyskinesia using an angiotensin converting enzyme inhibitor involved unpredictable art because it concerned the pharmaceutical activity of the compound. 21 USPQ2d 1702, 1704-5 (BDAI 1991); In re Fisher, 427 F.2d 1557, 1562, 29 USPQ, 22 (holding that the physiological activity of compositions of adrenocorticotropic hormones was unpredictable art; In re Wright, 999 F.2d 1557, 1562, 29 USPQ d, 1570, 1513-14 (Fed. Cir. 1993) (holding that the physiological activity of RNA viruses was unpredictable art); Ex Parte Hitzeman, 9 USPQ2d 1821, 1823 (BDAI 1987); Ex Parte Singh, 17 USPQ2d 1714, 1715, 1716 (BPAI 1990). Likewise, the physiological or pharmaceutical activity of acetyl cholinesterase inhibitors of pharmaceutical compositions of acetyl cholinesterase inhibitors and methods of treating Alzheimer's disease as well as other types of diseases or conditions in which it is desirable to administer a centrally acting acetylcholinesterase inhibitor prior to filing of the instant invention was an unpredictable art.

(5) The breadth of the claims

The instant claims are very broad. Claim 1 is directed to using the pharmaceutical compositions of any acetyl cholinesterase inhibitors for treating Alzheimer's disease as well as other types of diseases or conditions that are functionally described in which it is desirable to administer a centrally acting acetylcholinesterase inhibitor. The breadth of claims was a factor in Amgen v. Chugai Pharm. Co., 927 F.2d 1200, 18 USPQ2d (Fed. Cir.),cert. Denied, 502 U.S. 856 (1991). In the Amgen case, the patent claims were directed to DNA sequences that encoded amino acid sequences. Because a very small change in the amino acid sequence of a protein can result in a very large change in the structure-function activity of a protein and because the laws of protein folding are in such a primitive state, predicting protein structure (and hence, activity) while knowing only the sequence of the protein is akin to predicting the weather for a date in the future.

(6) The amount of direction or guidance presented

The amount of guidance or direction needed to enable the invention is inversely related to the degree of predictability in the art. In re Fisher, 839, 166 USPQ 24. Thus, although a single embodiment may provide broad enablement in cases involving predictable factors, such as mechanical or electrical elements, in cases involving unpredictable factors, such as most chemical reactions and physiological activity, more teaching or guidance is required. In re Fischer, 427 F.2d 839, 166 USPQ 24; Ex Parte Hitzeman, 9 USPQ 2d 1823. For example, the Federal Circuit determined that, given

the unpredictability of the physiological activity of RNA viruses, a specification requires more than a general description and a single embodiment to provide an enabling disclosure for a method of protecting an organism against RNA viruses. In re Wright, 999 F.2d 1562-63, 27 USPQ2d 1575. In the instant case, given the unpredictability of the physiological or pharmaceutical activity of acetyl cholinesterase inhibitors and any analog of galanthamine, lycoramine, or rivastigmine to be effective in treating any disease or condition in which it is desirable to administer an acetyl cholinesterase inhibitor is insufficient for enablement. The specification provides no guidance, in the way of enablement for the treatment of the functional description of diseases or conditions in which it is desirable to administer a centrally acting acetylcholinesterase inhibitor other than the treatment of Alzheimer's disease and only for the of galanthamine, lycoramine, and rivastigmine and the analogs of these compounds that are specifically described with the replacement substituents on the hydroxyl, methoxy, and even the N-methyl groups of galanthaine or lycoramine. In re Fisher, 427 F.2d 833, 166 USPQ 18 (CCPA 1970) (contrasting mechanical and electrical elements with chemical reactions and physiological activity). See also In re Wright, 999 F.2d 1557, 27 USPQ2d 1510 (Fed. Cir. 1993); In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Accordingly, this is because it is not obvious from the disclosure of one species, what other species will work. In re Dreshfield, 110 F.2d 235, 45 USPQ 36 (CCPA 1940), gives this general rule: "It is well settled that in cases involving chemicals and chemical compounds, which differ radically in their properties it must appear in an applicant's specification either by the enumeration of a sufficient number of the members of a group

or by other appropriate language, that the chemicals or chemical combinations included in the claims are capable of accomplishing the desired result." The article "Broader than the Disclosure in Chemical Cases," 31 J.P.O.S. 5, by Samuel S. Levin covers this subject in detail. A disclosure should contain representative examples, which provide reasonable assurance to one skilled in the art that the compounds that fall within the scope of a claim will possess the alleged activity. See In re Riat et al. (CCPA 1964) 327 F2d 685, 140 USPQ 471; In re Barr et al. (CCPA 1971) 444 F 2d 349, 151 USPQ 724.

(7) The presence or absence of working examples

As stated above, the specification discloses of analogs of the acetyl cholinesterase inhibitors of galanthamine, lycoramine, and rivastigmine that have the ability to treat any disease or condition in which it is desirable to administer an acetyl cholinesterase inhibitor. However, the instant specification only has enablement for the acetyl cholinesterase inhibitors of galanthamine, lycoramine, and rivastigmine and the analogs of these compounds that are specifically described with the replacement substituents on the hydroxyl, methoxy, and even the N-methyl groups of galanthaine or lycoramine and only for the treatment of Alzheimer's disease.

(8) The quantity of experimentation necessary

The quantity of experimentation needed to be performed by one skilled in the art is yet another factor involved in determining whether "undue experimentation" is required to make and use the instant invention. "'The test is not merely quantitative,

since a considerable amount of experimentation is permissible, if it is merely routine, or if the specification in question provides a reasonable amount of guidance with respect to the direction in which the experimentation should proceed.'" In re Wands, 858 F.2d 737, 8 USPQ2d 1404 (citing In re Angstadt, 537 F.2d 489, 502-04, 190 USPQ 214, 218 (CCPA 1976)). For these reasons, one of ordinary skill in the art would be burdened with undue "painstaking experimentation study" to determine all diseases or conditions in which it is desirable to administer a centrally acting acetylcholinesterase inhibitor other than the treatment of Alzheimer's disease as well as any analog of galanthamine, lycoramine, and rivastigmine, other than the analogs of these compounds that are specifically described with the replacement substituents on the hydroxyl, methoxy, and even the N-methyl groups of galanthaine or lycoramine that would be enabled in this specification.

15. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

16. Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear as to why "the methoxy group" is to be "replaced by another alkoxy group of from one to six carbon atoms", which renders confusion to the claim since an alkoxy group of one carbon atom would again be a methoxy group. The claim should rather state that "the methoxy group" is to be -- replaced by another alkoxy group of from two to six carbon atoms – in order to obviate this rejection.

17. Claim 9 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear as to why "the N-methyl group" is to be "replaced by" another "alkyl" group, which renders confusion to the claim since the term alkyl already embraces a methyl group. The claim should rather state that "the N-methyl group" is to be -- replaced by another alkyl group having 2 or more carbon atoms – in order to obviate this rejection.

18. Claims 41 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The following reasons support this rejection. It is unclear to the skilled artisan as to what specifically the instantly claimed compounds, galanthamine, lycoramine, analogs of galanthamine, lycoramine and rivastagmine that are clearly defined, are to be used therapeutically for? In addition, what is meant by the phrase, "effective amount"? Moreover, this ambiguous phrase does not clearly state what is to be therapeutically effected with an "effective amount" of the instantly claimed compounds, galanthamine, lycoramine, analogs of galanthamine, lycoramine and rivastagmine that are clearly defined. This rejection could be obviated with the incorporation of the following phrase or equivalent -- for treating Alzheimer's disease -- with the administration of the instantly claimed compounds, galanthamine, lycoramine, analogs of galanthamine, lycoramine and rivastagmine that are clearly defined.

Claim Rejections - 35 USC § 103

19. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

20. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

21. Claims 1, 3-5, 7-21, 22, 24-26, and 28-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 88/08708. WO 88/08708 teaches of the administration of lycoramine and various other alkoxylated derivatives, (see page 14). In addition, WO 88/08708 teach of that these compounds are used in the treatment of Alzheimer's disease, (see pages 1 and 10 and claim 22). Moreover, WO 88/08708 teach the skilled artisan that these galanthamine analogue compounds are be even be in delivered in sustained release capsules which release the contents over a period of several hours thereby maintaining a constant level of active compound in the patient's blood stream, (see page 25, 2nd paragraph). One having ordinary skill in the art is provided not only with the motivation, but also with explicit disclosures to make and prepare

pharmaceuticals in a delayed-release or time-programmed release forms. Although WO 88/08708 do not specifically recite the half life is from 1 to eleven hours, the properties are in fact inherent features and properties of these compounds. Moreover, a chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. In other words, where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). Moreover, due to the fact the same compounds are cited in the prior art, the claim limitations are met. It is further noted that a compound and its properties are inseparable. *In re Papesch*, 315 F.2d 381, 137 USPQ 43 (CCPA 1963). In addition, it is well within the level of the skilled artisan to determine when and how to deliver the active agent including delayed periods of time, such as after a patient's normal sleep time to an individual in need thereof, which clearly renders the instant claims obvious.

22. Claims 1, 3-5, 7-21, 22, 24-26, and 28-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 88/08708 in view of Moormann of U.S. Patent No. 5,643,905. WO 88/08708 teaches of the administration of lycoramine and various other alkoxylated derivatives, (see page 14). In addition, WO 88/08708 teach of that these compounds are used in the treatment of Alzheimer's disease, (see pages 1 and 10 and

claim 22). Moreover, WO 88/08708 teach the skilled artisan that these galanthamine analogue compounds are be even be in delivered in sustained release capsules which release the contents over a period of several hours thereby maintaining a constant level of active compound in the patient's blood stream, (see page 25, 2nd paragraph). One having ordinary skill in the art is provided not only with the motivation, but also with explicit disclosures to make and prepare pharmaceuticals in a delayed-release or time-programmed release forms.

23. The prior art reference of Moormann discloses that galanthamine is an anticholinesterase inhibitor that can pass the blood-brain-barrier and antagonize the cerebral effects of anticholinergic poisons. In addition, Moormann discloses that galanthamine promotes awakening from the twilight sleep, (see column 2). Moormann also teach of various formulations and modes of administration, including those in a "constant and controlled manner", (see column 3, in particular lines 19-30 and 46-62). Here, the skilled artisan is provided with the necessary motivation to develop controlled release formulations of the anticholinergic compound of galanthamine in order to avoid waking a patient from sleep. From these teachings the skilled artisan is provided with the rationale and incentive to develop and administer controlled release formulations of the antincholinergic agent of galanthamine in order to prevent a patient from becoming awake from sleep, as taught by Moormann.

24. Although WO 88/08708 does not specifically recite the half life is from 1 to eleven hours, the properties are in fact inherent features and properties of these compounds. Moreover, a chemical composition and its properties are inseparable. Therefore, if the

prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. In other words, where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). Moreover, due to the fact the same compounds are cited in the prior art, the claim limitations are met. It is further noted that a compound and its properties are inseparable. *In re Papesch*, 315 F.2d 381, 137 USPQ 43 (CCPA 1963). In addition, it is well within the level of the skilled artisan to determine when and how to deliver the active agent including delayed periods of time, such as after a patient's normal sleep time to an individual in need thereof, which clearly renders the instant claims obvious.

25. Claims 1, 3-5, 7-21, 22, 24-26, and 28-41 under 35 U.S.C. 103(a) as being unpatentable over Shapiro et al. of U.S. Patent No. 5,668,117 in view of Moormann of U.S. Patent No. 5,643,905 in further view of Conte et al.

26. Shapiro et al. provide the necessary disclosure to the skilled artisan for a clinical treatment method of Alzheimer's disease with the administration of the acetyl cholinesterase inhibitor of galanthamine, (see column 30, lines 28-32 and column 32, lines 21 and 55-57). In addition, it would have been obvious to the skilled artisan to include or utilize other types of acetyl cholinesterase inhibitors, which would obviously embrace rivastigmine and lycoramine, in pharmaceutical preparations an also with the

treatment of Alzheimer's disease. Moreover, Shapiro et al. is directed to the clinical treatment of neurodegenerative diseases, which includes Alzheimer's disease, (see column 1, lines 22-29). Although Shapiro et al. do not specifically recite the half life is from 1 to eleven hours, the properties are in fact inherent features and properties of these compounds. Moreover, a chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. In other words, where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). Moreover, due to the fact the same compounds are cited in the prior art, the claim limitations are met. It is further noted that a compound and its properties are inseparable. *In re Papesch*, 315 F.2d 381, 137 USPQ 43 (CCPA 1963).

27. The prior art reference of Moormann discloses that galanthamine is an anticholinesterase inhibitor that can pass the blood-brain-barrier and antagonize the cerebral effects of anticholinergic poisons. In addition, Moormann discloses that galanthamine promotes awakening from the twilight sleep, (see column 2). Moormann also teach of various formulations and modes of administration, including those in a "constant and controlled manner", (see column 3, in particular lines 19-30 and 46-62). Here, the skilled artisan is provided with the necessary motivation to develop controlled release formulations of the anticholinergic compound of galanthamine in order to avoid

waking a patient from sleep. From these teachings the skilled artisan is provided with the rationale and incentive to develop and administer controlled release formulations of the antincholinergic agent of galanthamine in order to prevent a patient from becoming awake from sleep, as taught by Moormann.

28. The prior art references of Shapiro et al. in view of Moormann of U.S. Patent No. 5,643,905 are further combined with the teachings of Conte et al. in order to reject the instantly claimed invention. Conte et al. provide the skilled artisan with the motivation that there is a need in the art for the rate-controlled delivery of medication, (see columns 1 and 2 on page 1017). Conte et al. also teach that "[i]t is well known that a drug must be given in the right dosage to produce the desirable effect, but the rate at which the active ingredient is administered/absorbed is also very important for its therapeutic effect." In addition, Conte et al. disclose there is an increasing awareness that the drug must be administered not only in the right amount at a proper rate but also at the right time, (see column 1, page 1017). Conte et al. also disclose of a proper need in time-programmed release of drugs that are related to changes in the alternation between day and night (activity and rest). Conte et al. further state that there is a need to administer pharmaceuticals in forms that release the drug both at the best possible rate and at the best possible time. In fact, Conte et al. specifically teach the artisan of pharmaceuticals that, "are able to release a drug at a specific rate, but the release starts only after a well defined period of time, (as cited from column 2, page 1017). Conte et al. teach of formulating delayed-release pharmaceuticals for a variety of reasons. Conte et al. disclose that there is a need to administer pharmaceuticals in forms that release the

drug both at the best possible rate and at the best possible time, (see column 2, page 1017). In summary, the skilled artisan is provided with motivation and explicit teachings to make pharmaceuticals for the treatment of Alzheimer's disease in a delayed-release formulation. It could not be more clear from the teachings of Conte et al. that one having ordinary skill in the art is provided not only with ample and compelling motivation but with explicit disclosures to make and prepare pharmaceuticals in a delayed-release or time-programmed release forms. In addition, the skilled artisan is provided with the necessary information to generate pharmaceuticals, such as those disclosed in Shapiro et al., for the treatment of Alzheimer's disease in a delayed-release or time-programmed release form as clearly taught by the prior art reference of Conte et al.

29. Clearly, it would have been obvious to one having ordinary skill in the art to employ acetyl cholinesterase inhibitors, namely galanthamine, to treat Alzheimer's disease as taught by Shapiro et al. Moreover, the skilled artisan is provided with the necessary motivation and teachings of Conte et al. to prepare pharmaceuticals in a delayed-release or time-programmed release forms, especially when the release of drugs at the best possible time that is related to changes in the alternation between day and night (activity and rest), as directly cited from Conte et al. and further to develop and administer controlled release formulations of the antincholinergic agent of galanthamine in order to prevent a patient from becoming awake from sleep, as taught by Moormann.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to D. C. Jones whose telephone number is (571) 272-0578. The examiner can normally be reached on Mondays, Tuesdays, Wednesdays, and Fridays from 8:30 am to 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Low, may be reached at (571) 272-0951. The official fax No. for correspondence is (571)-273-8300.

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